Fall 2008

# The Planet, 2008, Fall

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# THE PLANET

FALL 2008

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Vancouver goes for the green

Neglected Nuggets
Dog poop pollutes Whatcom waterways

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A bright light in the midst of a recession

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Roos replace cows to combat climate change

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Dear Reader,

Our generation has been charged with saving the world. But the world we inherited has been largely neglected, and the task seems daunting.

As America enters a new political era, the rest of the world watches to see if we will demand change, and if we will work cooperatively toward global solutions. We face many problems that have progressively worsened over the years. We also stand united in that we are fed up with the status quo, and many topics that have reached critical points are finally being addressed.

This fall in The Planet, issues are raised about Western's plans to build on the waterfront. Increasing tourism adversely affects Costa Rica. Your dog's waste is polluting waterways throughout Whatcom County, including your drinking water.

But all is not lost. We explore the intertwined concepts of the environment and the economy, and how recession may benefit the environmental movement. We look at how scientists in Australia are fighting global warming with kangaroos, and how Vancouver plans to host the most sustainable Olympic Games to date. We also help you sort through the hype of the commercial green movement as far as which cleaning products and produce are really "environmentally friendly."

Conservation is universal: it transcends all religions, ethnicities, countries, classes and cultures. It is a unifying movement and a process we are all a part of, for better or worse. We need to remember that we are not just protecting our planet, but also our existence.

The biggest threats to our future are ignorance and inaction. We strive to provide you with the information you need to make changes in your own lives and on a global scale. What you choose to do to protect your future and that of your children is up to you.

We appreciate your readership and welcome comments, suggestions and questions in the form of e-mail, letters or conversation.

Sincerely,

Emily A. Linroth

Thanks to: Bill (Captain Planet) for his guidance and support, our enthusiastic reporters and photographers, our diligent science editors and intrepid designers, and all who shared their stories and answered our questions.

# LABILE CONTEN

# Paving Pura Vida

## How tourism is changing the face of Costa Rica

Written by **Celia Jackson**
Photos by **Natasha Walker**

*Every year, visions of brilliant birds and furry marsupials frolicking in a lush jungle draw thousands of people from all over the world to Costa Rica's rainforests. But for those searching for a personal piece of paradise, fantasy gives way to the reality of tourism in the 21st century. Costa Rica is no quiet oasis of wildlife – it's exploding with development.*

Embedded between Nicaragua and Panama in Central America, Costa Rica has lured nature lovers for decades. Today, Costa Rica is known as much for its Cancun-style resorts as its exotic fauna. A growth spurt has resorts, eco-lodges and national parks jumbled like a misguided patchwork quilt, and the next generation of travelers may never know the eco-friendly Costa Rica.

Over the last decade, Costa Rica's tourism industry grew three times the world rate—7.1 percent compared to other popular destinations, such as Hawaii's 4.6 percent or Europe's 3 percent.

According to Kelly Hanika, a travel agent based in Snohomish County, Wash., Central America is an up-and-coming region. She said her clients go to Costa Rica for the surf.

"Most people go to the Central Pacific region," Hanika said. "It's an alternative to Hawaii, where the same kinds of beaches are less expensive."

For a country whose name literally means "rich coast," expensive beach resorts have become an invasive species in the landscape of Costa Rica's tourism industry. The success of traditional ecotourism has attracted international investors looking for new, untapped markets.

Isthmus Realty, a real estate firm in Costa Rica that sells hotel, resort and vacation home properties to foreign investors, handles millions of dollars in property transactions every year, and is anticipating a 20 percent growth rate over the next few years.

"We complain about the Californians here [in Bellingham], but they've already been to Costa Rica and built their oversized retirement homes," said Troy Abel, assistant professor of environmental studies at Western Washington University, who has been traveling to Costa Rica annually since 2000.

Investors with extra capital chose the country because Mexico is too expensive and Nicaragua and Panama are too dangerous, Abel said. But in a country known for having the only drinkable tap water in Central America, unrestrained development has turned many beaches into open sewers, according to scientists at the Costa Rica Institute of Drainage and Aqueducts (AyA).

Jaco, a surf-town in the Central Pacific region, has tested for fecal coliform levels eight times the regulatory limit, according to AyA. Of the 30 Western Washington University students and faculty who traveled to Costa Rica in the summer of 2008 as part of Huxley College's Rainforest Immersion Conservation Action (RICA) program, more than six were diagnosed with giardia, a serious intestinal infection caused by water-born parasites.

All along Costa Rica's stretches of white sandy beach, resorts and sky-scraping condos are sprouting like mushrooms after a hard rain. One, the Punta Leona Beach Resort on Costa Rica's Pacific coast, is a popular getaway for urbanites from San Jose, the country's capital. It is also part of a development company responsible for many of the condo and vacation homes in the Central Pacific region. Its slogan, splashed across billboards, reads "Costa Rica – the way it should be."

Western graduate Chris Andersen, who spent five and a half weeks in Costa Rica and stayed

at eco-lodges, beach resorts and ranger stations with RICA program peers, found resorts like Punta Leona and luxury hotels like the San Jose Marriot disconnected from traditional Costa Rican living.

"You can stay in Costa Rica, but never be in Costa Rica," Andersen said.

Abel, who created the Western RICA program in 2006, said he wanted his students to experience every side of the tourism industry.

"There are underappreciated contradictions in a place like Costa Rica," Abel said. "I wanted students to experience that contradiction by sitting in opulence at a resort in Costa Rica where the only traditional item on the menu was rice and beans."

Another implication of heavy development is habitat fragmentation, said Michael Medler, an associate professor of environmental studies at Western who has traveled to Costa Rica multiple times with the RICA program.

After decades of deforestation from agriculture and logging, the development boom is further turning Costa Rica's national park system into a series of separated islands. This may mean extinction for charismatic megafauna like the jaguar, because of the hefty space required to sustain such large creatures.

"We're constantly learning that we're protecting too small an area. We save 10,000 acres when we need a million," Medler said. "Migration patterns and species interactions show we need more area. It's hard for tourists to see the difference, but it's going to take huge areas to preserve the jaguar."

But while the Punta Leonas of Costa Rica flourish, its national parks are hampered by bureaucratic politics and lack of funding. National parks operate under tight government budget restrictions, so the parks only see a small percentage of the money they make.

"There are folks in the central government in San Jose whose power is connected to pots of money," Abel said. "There are these 'black boxes' in San Jose, where all the money goes and disappears."

Carara National Park, on the Pacific coast, has a fully remodeled visitor center that is empty because a concessions law that allowed parks to operate vendors (like gift and coffee shops) was derailed by politicians in the 1990s.

**"There are underappreciated contradictions in a place like Costa Rica. I wanted students to experience that contradiction by sitting in opulence at a resort in Costa Rica where the only traditional item on the menu was rice and beans."**

The Lonely Planet travel guide, used by thousands of students and low-budget travelers every year, dismisses Carara as a waste of time because it doesn't offer the same trail guide teams and lodging amenities that privately-operated reserves have.

Louis Giovanny Soto, the park's Chief Ranger, depends on foreign education programs, including Western's RICA, to help maintain the park. Years of college students visiting from the United States have contributed to trail maintenance and infrastructure development, and many of the concrete bridges on the park's trails are imprinted with student's names and personal messages.

Soto, who has watched over Carara for more than 30 years, said the tourism boom is also changing Costa Rica's culture, and places like Jaco are now nearly unrecognizable to him. He said the area has changed so much it doesn't even feel like home.

"We'll have nothing left of our own culture," Soto said.

Ever since it began in the 1980s and 1990s, ecotourism in Costa Rica has been a glass half-full, half-empty debate. It's a compromise between environmental protection and the needs of a developing country's economy. There are still true eco-lodges in Costa Rica, but they are few and far between.

Danta Corcovado Lodge is located on an 86-acre private nature reserve on the Osa Peninsula, five miles from Corcovado National Park and close to the Guaymi Indian Reserve.

Merlyn Oviedo, the lodge's owner, said he is part of a group of entrepreneurs who believe in giving back to the communities they live in. The Western RICA program students, who stayed for week, were able to meet and play soccer with the locals. Part of the money paid for their stay was used to paint six houses in the village of Guadalupe, and by the end of the trip, dozens of bright, eclectic murals decorated the villager's homes, with everything from hummingbirds and sunsets to pandas and Dalmatians.

Of an average all-inclusive packaged tour, 80 percent goes to hotels, airlines and other international companies, but more than 90 percent of the revenue from an eco-lodge goes back to the local community, according to the International Ecotourism Society.

To help travelers make more environmentally- and socially-conscious choices, the Costa Rica Tourism Board is developing a Certificate of Sustainable Tourism. It rates hotels and resorts on a scale of one to five, indicating their level of sustainability, much like a hotel star rating system.

Moreover, Costa Rican President and Nobel Peace Prize winner Oscar Aria Sanchez announced plans last year to make Costa Rica carbon neutral by 2021, according to a Center on Ecotourism and Sustainable Development press release.

Focusing on carbon neutrality may be an attempt to apply a veneer of eco-friendliness on a country struggling to keep its "green" reputation, Abel said.

"Costa Rica is touted as an environmentally-friendly place," he said, "but there's no political will to support the parks."

But for a country trying to get to first-world status with limited means, the tourism industry is putting it light years ahead of other Central American countries, Medler said.

"Those folks [Costa Ricans] are damn excited about their environment," he said. "The upper middle class folks were as enthusiastic as the tourists. They're more excited about seeing the coatimundi at Punta Leona than American tourists at Yellowstone National Park seeing the buffalos."

**Celia Jackson** studies environmental policy. This is her third published piece in The Planet.

**Above:** The white-faced coati, also known as a coatimundi, is a carnivorous mammal in the raccoon family that resides in North, South and Central America. About the size of a large housecat, these scavengers travel in troops and can be found traversing the jungles of Costa Rica night or day. Here, one pops up on a beach in the Central Pacific region of Costa Rica to forage through the backpacks and lunches of Western's RICA group.

**Left:** A cattle ranch borders second growth rainforest near Monteverde Private Reserve, a cloud forest in the central highlands of Costa Rica. Once Costa Rica's main export, the beef trade is now less profitable than preserving land and rainforest.

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**1** Albi (short for Alberto), a resident juvenile scarlet macaw at Corcavado National Park Biological Station, depends on park rangers and tourists for food. Human interaction has made this brilliant red parrot unable and unwilling to fend for itself in the wild. A bird of international fame, the scarlet macaw has become a symbol of Costa Rica's tourism industry.

**2** Known as "hot lips" for the voluptuous shape of its pink petals, Psychotria *poeppigiana* is related to coffee and attracts hummingbirds and butterflies with its sweet nectar. It grows deep in the rainforest, shown here in the undergrowth at Monteverde Private Reserve in Costa Rica.

**3** The Costa Rica silver scarab beetle, pictured in Monteverde Private Reserve, is found across tropical America, but is particularly fond of cloud forests. They are nocturnal insects and also come in shades of gold, green and scarlet, but often reflect colors around them. Here, a Monteverde park guide displays a scarab beetle to a group of Western RICA program students.

**4** The glasswing butterfly (Greto Oto) perches on a flower in the Monteverde Private Reserve cloud forest. Its Spanish name, "espejitos," means "little mirrors" because much of the tissue on its wings is translucent. As a caterpillar, the species feeds on toxic plants and retains much of this toxicity into its adult butterfly life to deter predators. Butterflies are often a good indicator of the health of an ecosystem, and as human populations grow, sensitive insect species such as the glasswing butterfly tend to shrink.

**5** Deadwood hollowed trees make ideal nests for the scarlet macaw. In Carara National Park, this pair is shown shearing away bark from the entrance of their nest, a technique thought to prevent the grip of predators that climb up in pursuit of precious eggs. While the scarlet macaw population is finally in recovery after decades of illegal poaching, habitat destruction, often from resort construction, is whittling away the parrot's nesting and feeding grounds.

**6** The green-crested brilliant hummingbird (*Heliodoxa jacula*) lives in wet highland forests, shown here in the Monteverde cloud forest feeding on nectar from a bird feeder. A popular tourist attraction, hummingbird feeders second as an easy nocturnal feast for the hundreds of species of bats Costa Rica boasts.

**7** A fern leaf on a trail in the Monteverde cloud forest. This private reserve sits at an elevation of 4,662 feet and sustains more than 2,000 species of plants, including over 200 species of ferns. Because the forest exists at such a high altitude, it receives less rainfall than a rainforest, but has substantially higher humidity levels–producing a misty, cloudy cover that supports a plethora of flora and fauna.

**8** The black spiny-tailed iguana is a native of Central America and is commonly found throughout all of Costa Rica. Here one sunbathes in the grass at Carara National Park in the Central Pacific region of the country. While they are primarily herbivores, they have become notorious egg hunters in the park, caught on camera scaling trees and stealing eggs and young chicks from scarlet macaw nests.

# Dereliction

Written by **Peter Pearsall**
Photos by **Cassi Gallagher**

*Urban watersheds are a battered bunch. Raw sewage, pesticide- and fertilizer-laced farm runoff, stormwater drainage—all are contaminants that find insidious ways to reach watercourses, polluting surrounding watersheds and endangering their inhabitants. Whistle-blowers are quick to point fingers at the usual suspects: cars, commercial agriculture, population density and the like, but another culprit may lurk—or sit, or lie, or play fetch—in their very backyards.*

Meet Spot, an unwitting accomplice to ecological degradation.

Everyone can relate to *Canis familiaris*, also known as the domestic dog: man's best friend, the vigilant sentry, a loyal companion through thick and thin. Molded into myriad forms by centuries of selective breeding, dogs of all shapes and sizes have become one of America's most popular pets—second only to cats—with 39 percent of U.S. households owning at least one, totaling 74.8 million pooches in all, according to the American Pet Products Manufacturers Association 2007-2008 National Pet Owners Survey.

Lots of dogs eat lots of food, and in turn make lots of poop. On average, a single dog produces three-quarters of a pound of waste per day, according to Kym Fedale, environmental educator with the City of Bellingham. Whatcom County is home to 37,000 dogs—about one for every five people—that cooperatively produce nearly 14 tons of dung daily.

To be sure, a lot of this poop is picked up and bagged by law-abiding citizens walking their pooches (Bellingham's spotty scoopers face a $46 fine if caught in public). But what about those neglected nuggets on the trails? And what comes of the piles that owners leave in the privacy of their yards?

It ultimately goes into the water. Water that people recreate in; water that aquatic wildlife call home.

Odious enough as it is, dog feces harbor numerous pathogenic microorganisms to boot, including salmonella and E. coli, as well as the intestinal parasites hookworm and roundworm, Fedale said. Doggie doo also contains 107 fecal coliforms, or intestinal bacteria, per gram, roughly the same as human feces.

Dog poop is nasty stuff—no surprise there. But how do turds go from being perky lawn rosettes to water-borne waste?

Unattended poop does not simply vanish into the grass, as many pet owners would like to believe, Fedale said.

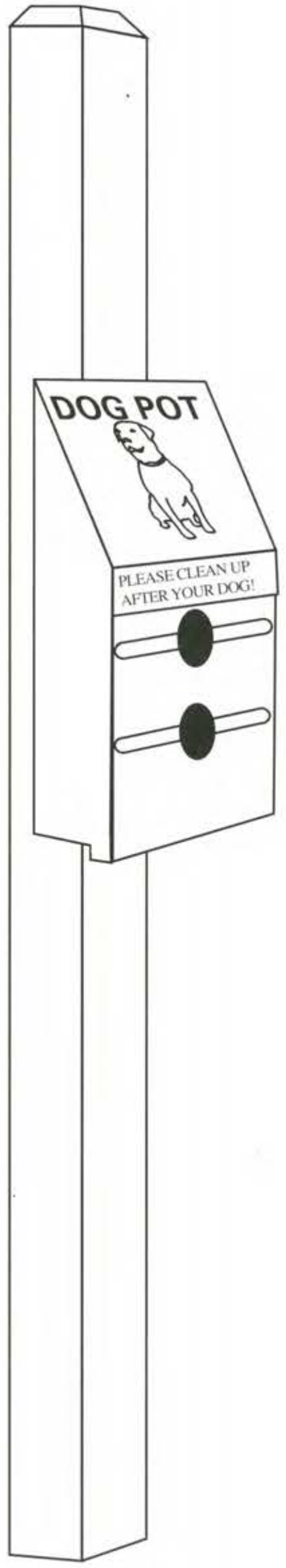
As rain souses Bellingham and drenches these droppings, resident bacteria spring to action and break down the organic compounds—most important of which are the nitrogen- and phosphorus-based compounds, used by plants as food—converting them into inorganic, more water-soluble forms.

The poop rapidly decomposes, weather permitting, and leaches its constituents—namely, nitrogen and phosphorus, and various pathogens—into the surface water, where they will either flow into storm drains toward detention ponds or directly join nearby streams. (During this transition from solid to mostly-liquid poo, hookworms and other parasites, as well as some pathogenic microbes, percolate into the soil, where they can remain active for weeks—even months in some cases, as with giardia and salmonella—posing risks of disease to both humans and wildlife.)

In a detention pond, stormwater drainage slows to a crawl, allowing larger particles to settle out of the sluice, said Bill Reilly, storm and surface

Dogs run around in the off-leash area at Lake Padden.

# of doody




water manager for the City of Bellingham. This torpor gives pond vegetation a chance to snatch up some nitrogen and phosphorus, but that's the extent of stormwater treatment for much of Bellingham. Any dog-waste pathogens, which are far too small to settle out, and unused nutrients are piped from the pond into streams and rivers.

Once the poop's nutrients and pathogens enter watercourses, they join other non-point source pollutants—pollutants whose origins are myriad and diffuse—in a homogenized slurry that eventually drains into lakes or the sea. This runoff, which can contain unnaturally high levels of nitrogen and phosphorus, leads to nutrient-loading, or eutrophication, and can wreak long-term havoc on aquatic ecosystems.

In freshwater basins such as Lake Whatcom, phosphorus is a limiting nutrient, meaning that its presence (or absence) largely controls aquatic plant growth, said Leo Bodensteiner, assistant professor of environmental science at Western Washington University. If excess phosphorus is present in the summer months, when sunlight intensity and duration are peaking, photosynthetic phytoplankton capitalize on this surplus, multiplying exponentially until the nutrient is depleted. After exhausting their fuel, the phytoplankton die off in droves, their minute corpses sinking down to the cold, unlit depths of the lake. In this oxygen-poor abyss, bacteria set about metabolizing the billions of corpses, using up what scant oxygen is available and excreting phosphorus-laden waste in return. The result is anoxia, or oxygen-stripped "dead zones," often abundant in phosphorus, at the lowest, coldest depths—areas where large species of freshwater fish typically dwell in the summer.

With the arrival of winter comes inclement weather, roiling surface waters of the lake with windstorms and rainwater input. This mixing occurs throughout the lake's depth-profile, churning up phosphorus-rich bottom layers and effectively refueling the eutrophic cycle.

Nutrient-loading can sound a death knell for lakes, creating an endless loop of algal blooms and die-offs that cloud the water in summer months and asphyxiate fish, Bodensteiner said.

"Once you get the ball rolling, you get this snowball effect," he said, referring to the eutrophication of Basin 1, the shallowest and most populous of Lake Whatcom's three basins. "The lake is a green soup in the summer with no oxygen in the lower layers, and it gets worse each year."

The entire Lake Whatcom watershed is home to 3,598 licensed dogs, according to an August 2008 study by the Washington State University Whatcom County Extension, that produce as much poop as 1,000 humans every year. And if a 1999 survey is any indication—results found more than half of Lake Whatcom dog owners didn't pick up piles in their yards—lots of this ca-ca still ends up in the lake.

So poo on the ground doesn't stay put; in fact, it's highly mobile (disregarding the mileage of trod-upon turds, that immeasurable distance) when the weather's wet. And it's hardly innocuous, so naturally every owner should be bagging the crap, right?

Fortunately, many here do: a 2008 survey by the City of Bellingham found, of those questioned, 75 percent of dog owners in the Whatcom Creek watershed pick up after their pets both in public and at home. Of those doing backyard doo-doo duty, 75 percent are also properly disposing of it, i.e., bagging turds as trash or flushing them down the toilet.

But despite sundry reasons to scoop— namely, compliance with city law, ecological stewardship, avoiding the stigma of being a turd-abandoner—some still leave their pets' leavings out in the rain.

Owners' excuses are numerous, if nothing else, Fedale said. Some claim they don't have time, others dislike the handling of poop (fancy that); owners of smaller breeds feel their pooch's paltry contributions are insignificant in the scheme of things.

"The size of the dog doesn't matter—the poop is composed of the same ingredients," she said.

Some hold the misconceived notion that dog poop is a natural fertilizer, perfectly in harmony with

Sola, a black and tan hound and rottweiler mix, out for a run with her owners at Lake Padden.

their grassy yard or the woodland undergrowth near trails.

In reality, the sheer density of dogs in Bellingham—an average of 450 on each of the city's 25 square miles—produces far more waste than a natural ecosystem can handle, Fedale said. Also, dog poop is rich in protein and phosphorus, a veritable nutrient overload; the mammals naturally found in an average square mile of undisturbed Bellingham forest (four fox, 8.5 skunks, 0.1 lynx, and so on—a much smaller distribution of animals) produce relatively nutrient-poor scat, and much less of it.

And one must remember that very little, if any, of Bellingham's acreage qualifies as "undisturbed forest"; indeed, most of the city is covered by impermeable asphalt and concrete, two surfaces conducive to channeling toxic runoff toward watercourses.

So what to do about all this poo? Most cities have laws punishing negligent pet owners, to varying success: Bellingham's pooper-scooper law (enacted in January 1987 and modeled, like similar ordinances across the country, after New York's seminal 1978 Canine Waste Law) is largely flouted, said Laura Clark, community outreach director for the Whatcom County Humane Society.

"The law is difficult to enforce because a witness needs to be present," she said. "Unless a citizen files a verifiable complaint, our officers need to be there when it happens, and they can only be in so many places at once."

A recent innovation used overseas in cities such as Vercelli, Italy, could be the smoking gun (or steaming pile) for scooper laws worldwide: doggie-DNA testing. By procuring the genetic fingerprint of every registered pooch within city limits, Vercelli officials hope to compile a DNA database, allowing police to test unscooped poo, identify the offending owner and mete out justice accordingly.

One problem: What about all the unregistered dogs, pooping wherever they please? A 2005 New York Times Magazine article by Stephen Dubner and Steven Levitt suggested that cities offer owners a cash incentive to license their dogs (instead of charging an annual fee, as is currently the norm), and in the licensing process collect and catalog Fido's DNA.

Whether this system proves effective, or even financially feasible—Dubner and Levitt estimated that DNA tests for the million or so dogs in New York would cost around $30 million—has yet to be seen. For now, Fedale and the City of Bellingham are taking a more grassroots approach to combat crap.

The key is prevention via education, Fedale said. She heads the Hounds for Healthy Watersheds program, a volunteer-run operation that sends conscientious citizens to Bellingham's trails and parks, armed with informative flyers, dog-poo bags and a penchant for shooting the shit.

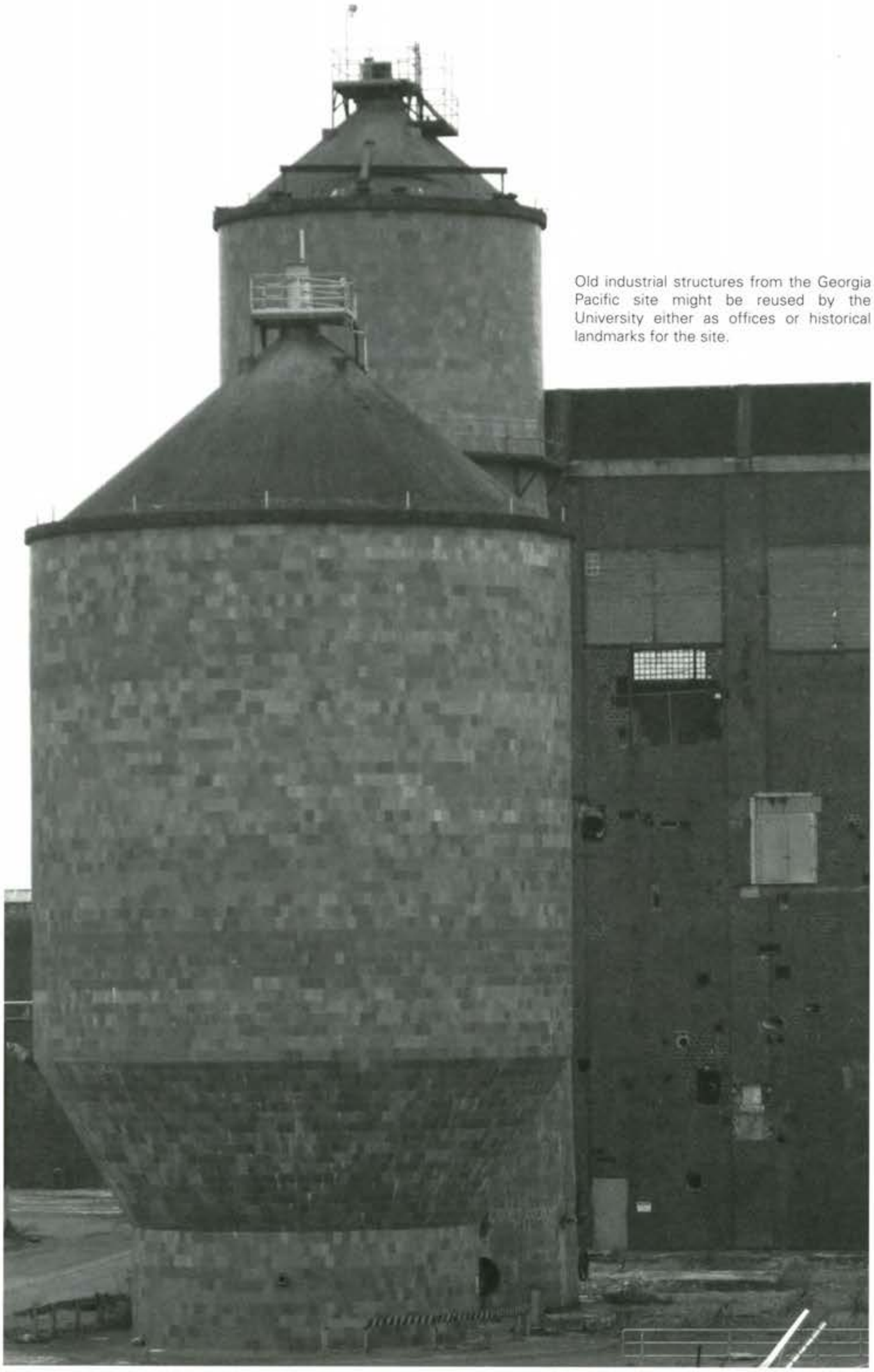
"Our volunteers approach people with dogs and ask if they have a bag—if they don't, we hand them some and give the spiel; if they do, we reward them with coupons for things like dog treats," she said. "It's the one-on-one contact that really makes the difference."

Informing owners of the ecological consequences and health risks from dog waste is crucial, Fedale said. According to the Whatcom Creek survey, many of the regular scoopers weren't clear why it was the right thing to do.

"Our job is to educate through public interaction," she said. "We're hoping to create a social norm where the majority of owners pick up after their dogs, and the community is shocked by those who don't."

The success of such programs depends on widespread citizen involvement—specifically, irresponsible owners need to clean up their act. With pooches comes poop, so unless these scoundrels want Bellingham's watersheds going to the dogs, they better start scooping.

**Peter Pearsall** studies environmental journalism. He has been published in The Planet, Klipsun, The Western Front and The Ferndale Record-Journal.



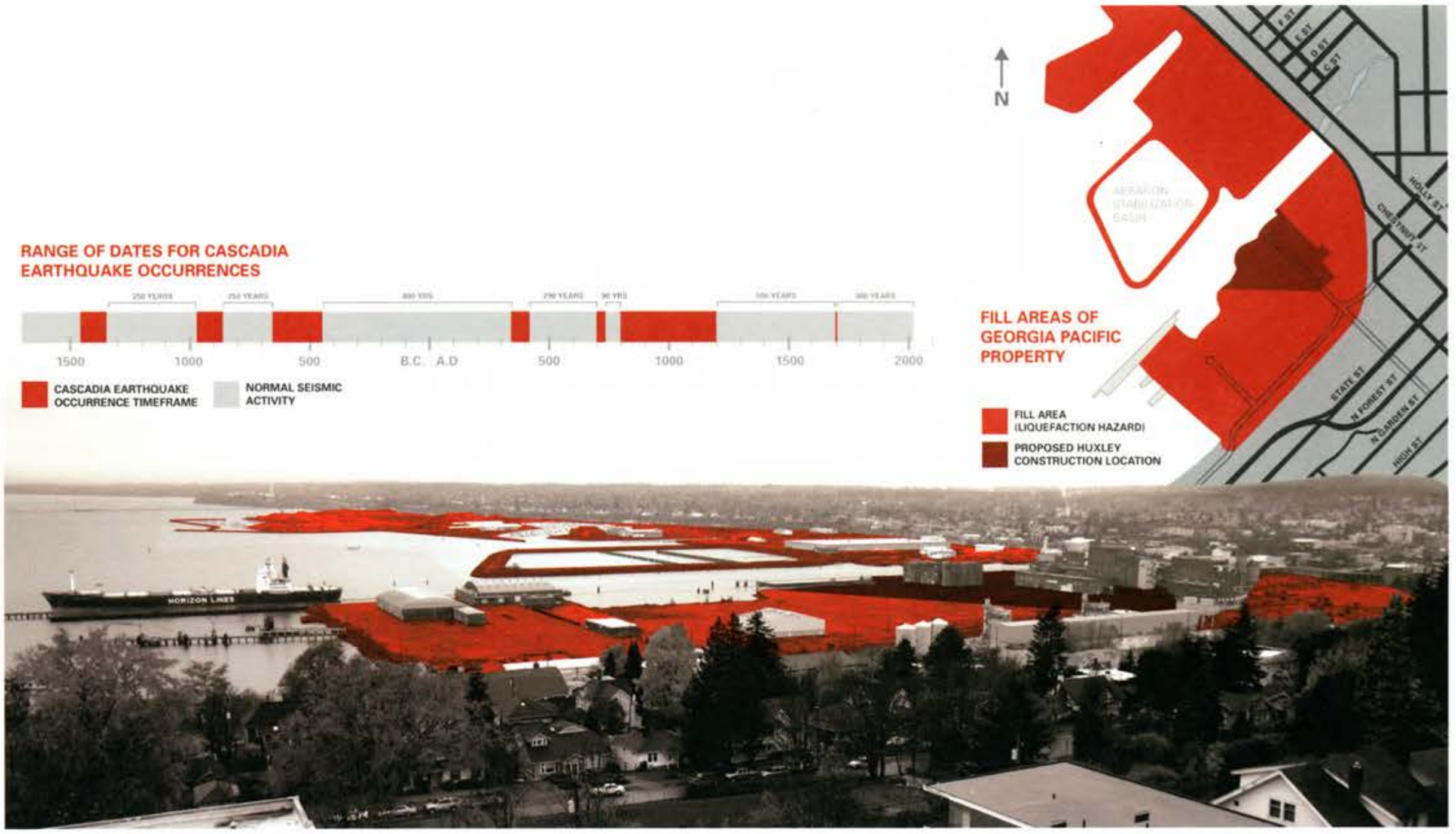
Old industrial structures from the Georgia Pacific site might be reused by the University either as offices or historical landmarks for the site.

*Two miles off the Pacific Coast, a pair of massive tectonic plates are pressing against each other. Suddenly, one of the plates buckles under the immense buildup of more than 300 years of pressure. Tremendous amounts of force surge toward the earth's surface from the offshore epicenter, causing a magnitude 9.5 earthquake. Antiquated brick buildings sway and topple like Jenga pieces, windows shatter glass into the street and buildings crash into the ocean.*

# ON SHAKY GROUND

## Redeveloping Bellingham's Waterfront

Written by **Doug Naftz**
Photos by **Cassi Gallagher**




The Georgia Pacific property and proposed Huxley construction site as seen from Western's campus. Photo by Erik Simkins. Photo Illustration & Infographics by Ryan Scott.

No, this isn't a scene from another Hollywood blockbuster. It is one of many possible worst-case scenarios predicted by geologists for Whatcom County. Recently discovered faults located near Bellingham, combined with predictions of "the next big one," are raising controversy over Western's plans to extend its campus to Bellingham's waterfront—a site geologists consider a much higher risk area than main campus.

The size of the project, coupled with the dangerous mixture of chemical waste and geological hazards that abound on the site, have many in the community questioning the economic and technical feasibility of such an ambitious redevelopment project.

Adjacent to downtown Bellingham, the site has a land area of about 220 acres—equivalent to 165 football fields—and is the largest contiguous swath of developable coastal property along the Pacific shoreline of the United States.

From ground level, gutted brick buildings that once housed heavy industrial machinery loom overhead, flanked by piles of twisted steel and rusted iron scattered in a sea of broken concrete. A group of harbor seals swim nearby in the shallow murky waters of the Whatcom Waterway, a reminder that this once-thriving ecosystem remains productive in spite of the historical insults of heavy industry.

Although the partially demolished site looks like the scene of a recent natural disaster, the Port of Bellingham plans to transform it into a thriving mixed-use development area slated to include a state-of-the-art new educational center for Huxley College of the Environment, several public parks and a "clean ocean marina" intended to restore fragile salmon habitat.

## A Hazardous History

Prior to being acquired by the Port of Bellingham in 2005 for $10, most of the redevelopment site was occupied by pulp and paper company Georgia-Pacific (GP), who purchased the site from Puget Sound Pulp and Timber Company in 1963. In 1965, GP built a chlorine generation plant to produce chlorine, a bleaching agent, from seawater.

Mercury was a toxic byproduct of this process, and until 1979 it was dumped in a shallow marine area known as the Log Pond, a nickname that harkens back to former logging storage near the site's pulp mill.

Following the passage of the Clean Water Act in 1972, GP was forced to build a treatment facility to clean up its discharge into Bellingham Bay. The Aerated Stabilization Basin, built in 1978, became a depository for mercury byproduct.

The liability associated with developing this property is immense. As a result of GP's pollution, the Port is faced with developing cleanup alternatives for 11 sites harboring hazardous materials.

The cleanup is being funded by the Port with the assistance of tax dollars and state and federal grants.

## Western on the Waterfront: Cutting Edge, or Ticking Time Bomb?

Many are concerned about the geologic instability of the upland (buildable portion) of the site, including scientists in Western's geology department.

A major factor in the area's instability dates back to a time in Bellingham's early history when fill was dumped directly into Bellingham Bay, slowly widening the shoreline. This practice was common in many coastal cities; for example, Seattle's waterfront district, including its two major sports stadiums, Qwest Field and Safeco Field, were built on fill.

The technical problems associated with building on fill are complex and vary from site to site. Perhaps the single largest contributing factor to the safety of such a building is the potential for earthquakes. Recent predictions and discoveries by geologists in the Northwest do not bode well for those who have aspirations to develop on fill in the region.

"Any day now, we are expecting a magnitude 9, magnitude 9.5 earthquake," said Bernard Housen, associate professor of geology at Western.

Housen's main concern is the potential for liquefaction under the former GP site.

Liquefaction occurs when water-saturated sediment or fill temporarily loses its shear strength, and begins to assume fluid-like properties. Most people experience this natural phenomenon at the beach when wiggling their toes in wet sand.

Many fear an earthquake could cause the new buildings to literally flow downhill into Bellingham Bay.

Based on the risks associated with liquefaction, former Bellingham mayoral candidate Dan McShane advocates a limit on construction within 300 feet of the shoreline. McShane, a geotechnical engineer, believes the geological concerns can be safely mitigated using modern engineering techniques, but warns that costs can be high.

Not everyone is as optimistic.

Brian Gouran, 35, the environmental site project manager for the Port of Bellingham, stands on the redevelopment site.

"The site geology is about as bad as you can get for major development," said Housen.

The site is currently classified as an 'E' in an 'A' through 'F' scale of safety classes—'F' being the most hazardous. Housen and the rest of the geology department strongly advocate reclassifying the property according its potential for earthquakes and liquefaction. This would result in stricter development standards and a more intensive geological study.

"In the comments to the last Environmental Impact Statement, we [the geology department] recommended that the site be upgraded to an 'F' to encourage further investigation about its development potential," said Robert Mitchell, associate professor of geology at Western. "That would then force developers to thoroughly investigate its liquefaction and seismic potential for development purposes."

faults, may not be factored into the proposed building plans.

"By the letter of the law, we can start building the new Huxley building next year, but we know that its design will be inadequate unless these newer discoveries are factored in," Housen said.

The changes resulting from these new earthquake hazards have not been incorporated into building codes in Bellingham, and according to reports from the USGS, they may never be, due to Bellingham's distance from the fault lines.

Smith insists the new Huxley building will be built to the best structural engineering standards available.

Yet Housen is concerned Western may decide not to invest in construction safer than what is required by the current building codes.

"They'll question additional expenses," said Housen.

**"I hope that the first major project that the disaster planning school makes is the disaster plan for their own school."** Bernard Housen

Brad Smith, dean of Huxley College of the Environment, believes the problem isn't the soil, but gaining enough funding to construct safe buildings. A former administrator for the Environmental Protection Agency, Smith has faith that the regulatory framework surrounding the project will appropriately address structural and environmental concerns raised by community members.

"A fantastic 100-year vision doesn't come cheap, and we live in challenging times economically," Smith said. "But I also believe that committing to do something of an average scale would make it more difficult to raise money than committing to a world-class scale. Average doesn't sell—it's boring."

Rather than viewing the risks associated with bringing Western to the waterfront as barriers, Smith sees them as challenges to be solved using the best scientific and engineering standards available.

Housen is worried that risks associated with newly discovered seismic faults in Whatcom County, including the Kendall and Boulder Creek

Some also reject plans to move Huxley College to the waterfront because of the environmental controversy surrounding the area—considering the move a tragic irony that could tarnish Huxley's image as a forward-thinking environmental college.

Housen described being approached several times by Western alumni who expressed their concern over Western's plans to move to the waterfront. They were worried not only about geologic hazards, but about mercury contamination in the area's marine sediments that could be stirred up during an earthquake.

"Their concern is that Huxley is selling out their legacy," Housen said.

Gigi Berardi, professor of environmental studies and director of Huxley's new Institute for Global and Community Resilience, insists Huxley's core ideals will not be compromised in a move to the waterfront.

"For Huxley College, it's not going to be an economic bottom line," Berardi said. "Of course we're going to hold to the tenets and ideals that Huxley has adopted. That has not really changed fundamentally in decades, and that's what's important."

Berardi doesn't see the proposed move to the waterfront in quite the same light as Housen and Smith. She views Huxley as a participant, assisting the Port in the planning of the project, advocating for sound decisions and taking advantage of the educational opportunities that result.

"It doesn't need to be necessarily the wholesale move of the college down there," Berardi said.

Another concern related to Huxley's institutional image is linked to one of their newest degree tracks: disaster reduction and emergency planning. Would Huxley's move to the waterfront, a site determined by the geology department to be considerably more hazardous than their current location, be ironic?

"I hope that the first major project that the disaster planning school makes is the disaster plan for their own school," Housen said.

According to Berardi, a Huxley building at the waterfront is not set in stone if it means accepting a high degree of risk.

"I would not want to go forward if there was risk that could not be mitigated," Berardi said.

With many questions yet to be answered, and building plans that are still being negotiated, one thing remains clear: student and community oversight is vital. This will help ensure that safety and environmental restoration remain high priorities for the Port and Western as they move forward with plans to extend campus to the waterfront.

Time will only tell if the current scene of vacancy, contamination and destruction at the waterfront will be replayed in the aftermath of a large-magnitude earthquake or tsunami due to poor planning and structural engineering.

"My question to the Huxleyites is: is it sustainable to build down there?" Housen said. "If you have a LEED-certified building inundated by a tsunami, what does that get you?"

**Doug Naftz** studies environmental policy and cellular biology. He has been published in The Western Front.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# Recession's Green Lining

Written by **Amy Meyer**
Photos by **Andriy Semenyuk**

*Layoffs, salary cuts and lost investments are vaporizing cash from wallets around the country. Just look around town to notice car dealerships' motionless lots, grocery carts with lighter loads and thermostat dials set low despite the cold. Keep looking and you might notice smaller garbage cans and bigger recycling bins, hinting at a more sustainable future for consumers.*

The economic downturn is causing turmoil in the financial world and putting a damper on consumer spending. But in the midst of a recession, Americans are making daily decisions to save their greenbacks – and it just might be the green thing to do.

For environmentalists concerned with overconsumption, the recession is a blessing in disguise. Decreased consumption in homes and businesses may mean less packaging and production waste, and therefore less waste in landfills, according to Finance Markets, an independent online publication.

Garbage is a good indicator that Bellingham residents are finding ways to cut back on unnecessary spending and waste. According to Rodd Pemble of Sanitary Service Company, Whatcom County has seen a decrease in the amount of garbage compared to last year's figures, while residential recycling has increased.

Some renters and homeowners have been making attempts to cut back on unnecessary spending and are consuming more cautiously.

"I've tried to start making decisions that will save me money each week," said Elise Nelson, a senior at Western Washington University. "I drive less. When it's cold, I keep the heat off and put a sweatshirt on."

According to a Gallup Poll, retail sales dropped 1.2 percent in September, the biggest drop in three years. Consumers have also said they will be more conservative in their holiday spending, according to the polling organization. It may be a bad sign for the economy, but responsible consumption could be just what the doctor ordered for a threatened environment.

According to the Whatcom Transit Authority (WTA), driving less is also an increasingly common theme. Fuel prices and crunched budgets have encouraged increased use of public transportation, resulting in WTA ridership soaring to its highest level ever. According to Business Week, auto sales have slumped for the third year in a row. The only vehicles with strong sales, they reported, are small, fuel-efficient models that save people money and are better for the environment.

Beyond using public transportation, Phyllis Shacter, a retired Bellingham resident, said she has cut back her household spending with several techniques. Not only does she create her own environmentally-friendly cleaning products out of household staples such as vinegar and vegetable oil, Shacter also hung insulated drapes and closed off her upstairs air vents in order to save on her energy bills.

"Little things begin to make a difference," Shacter said. "We cut way back on spending, and our quality of life didn't decrease. What we valued—health, relationships, being in nature—that didn't change."

Bellingham City Council member Jack Weiss believes that the economic downturn will force businesses to be more efficient. He said he foresees less wasteful packaging, more telecommuting, less shipping, less business travel and more value placed on materials and resources used in business.

Sustainable Connections, a Bellingham non-profit organization, is working towards environmentally-friendly business practices by illustrating the financial savings of going green.

Photo by **Elizabeth Linder**
Photo Illustration by **Ryan Scott**

**"Little things begin to make a difference. We cut way back on spending, and our quality of life didn't decrease. What we valued - health, relationships, being in nature - that didn't change."**

Their 2008 Towards Zero Waste campaign unites locally owned and independent businesses to reduce waste and save money doing so.

April Claxton, Sustainable Connections' office manager and volunteer coordinator, said construction-related companies are receiving some of the biggest savings after implementing environmentally-friendly practices into their business models.

According to their Sustainable Connections' Towards Zero Waste profile, Louws Truss, Inc., a roof truss and manufactured wall panel provider, was able to eliminate 90 percent of their waste, as well as most of their waste removal costs, after working with Sustainable Connections. By learning to reuse and even sell scrap lumber that was previously being thrown away, the company now profits from recycling and selling the scraps instead of paying to have them sent to a landfill.

Rick Dubrow, president of A-1 Builders in Bellingham, said he is optimistic about his building and remodeling business this year, despite the recession. Dubrow's building business promotes the use of minimal and high-quality building materials since many of his clients are looking for efficiency and long-term savings. And Dubrow said the sustainable construction techniques he uses that actually cost less than traditional building practices.

"Then you can take that money you saved and put it towards better products," he said. "Maybe you have better windows, better doors, better insulation and a more efficient heat plan. You can save on your heating, and you can save the planet."

At Brigid Collins, a local non-profit family support center, staff brainstormed office techniques that were both cost- and resource-saving. Executive director Byron Manering said he is promoting a "lean and green" image. He said he and his staff have started maximizing the supplies they already use, rather than purchasing wasteful duplicates. They started small, turning off lights and rethinking individually printed meeting agendas, but Manering said the savings—financial and environmental—are worth the extra thought.

"The more we embody honoring the resources we have, the more we can share that with our clients," he said.

But despite environmental gains made by financially-conscious consumers, the recession is weighing on the progress of the green movement. In a recession, consumers have an increased tendency to overlook environmentally-friendly products and services because of cost. However, the lower price of conventional products does not reflect their social externalities – costs that aren't paid directly by the consumer, such as pollution from manufacturing, said Dan Hagen, an environmental economics professor at Western Washington University.

"When someone's budget is squeezed, they ignore savings to society as a whole," Hagen said. "And they discount too heavily their future private savings, which leads to consumers buying products that are not very green."

The conversation about responsible consumption will continue with or without a recession, and perhaps these environmentally-friendly, cost-saving habits will stick. If these trends continue, saving money may have a hand in saving the planet.

"If people do it right," Weiss said, "they have the ability to really work on changing their whole lives."

**Amy Meyer** studies environmental education. This is her first published piece.

**Left:** Dave Rehm, 70, and Marty Rehm, 67, hop on their matching mopeds in downtown Bellingham. The couple says they enjoy saving gas money by riding their fuel-efficient vehicles.

**Right**: A male kangaroo at the Australian Reptile Park in Gosford, New South Wales, Australia.

# KANGAROO: IT'S WHAT'S FOR DINNER

Written by **Cody Gillin**
Photos by **Sita Thompson**

*Imagine sitting in Bob's Burgers and Brew, ready to bite into an American classic: the hamburger.*

Now picture the braised beef patty being replaced with grilled kangaroo. Sound far-fetched? Scientists in Australia don't think so. In fact, they believe putting kangaroo on the menu could help save the planet.

Recently, scientists have been raising a stink about cow farts. More specifically, they're looking at one component of cow flatulence: methane. Methane is a greenhouse gas, one of many gases that hang around in the atmosphere, trap heat and cause global temperatures to rise. According to the United States Environmental Protection Agency, cows, sheep and other livestock are responsible for 28 percent of methane emissions from human-related activities around the world.

But kangaroos don't have a gas problem – they don't produce methane. In Australia, researchers are looking to kangaroos as a means of reducing methane emissions to help curb global climate change.

Herbivores are animals that eat plants. But they don't actually digest plant material on their own. Instead, a bunch of microbes do it for them. When a cow swallows grass, the grass travels down the esophagus to a chamber called the rumen. This place is home to bacteria that break down the grass through fermentation. Cows get their energy by metabolizing this plant material.

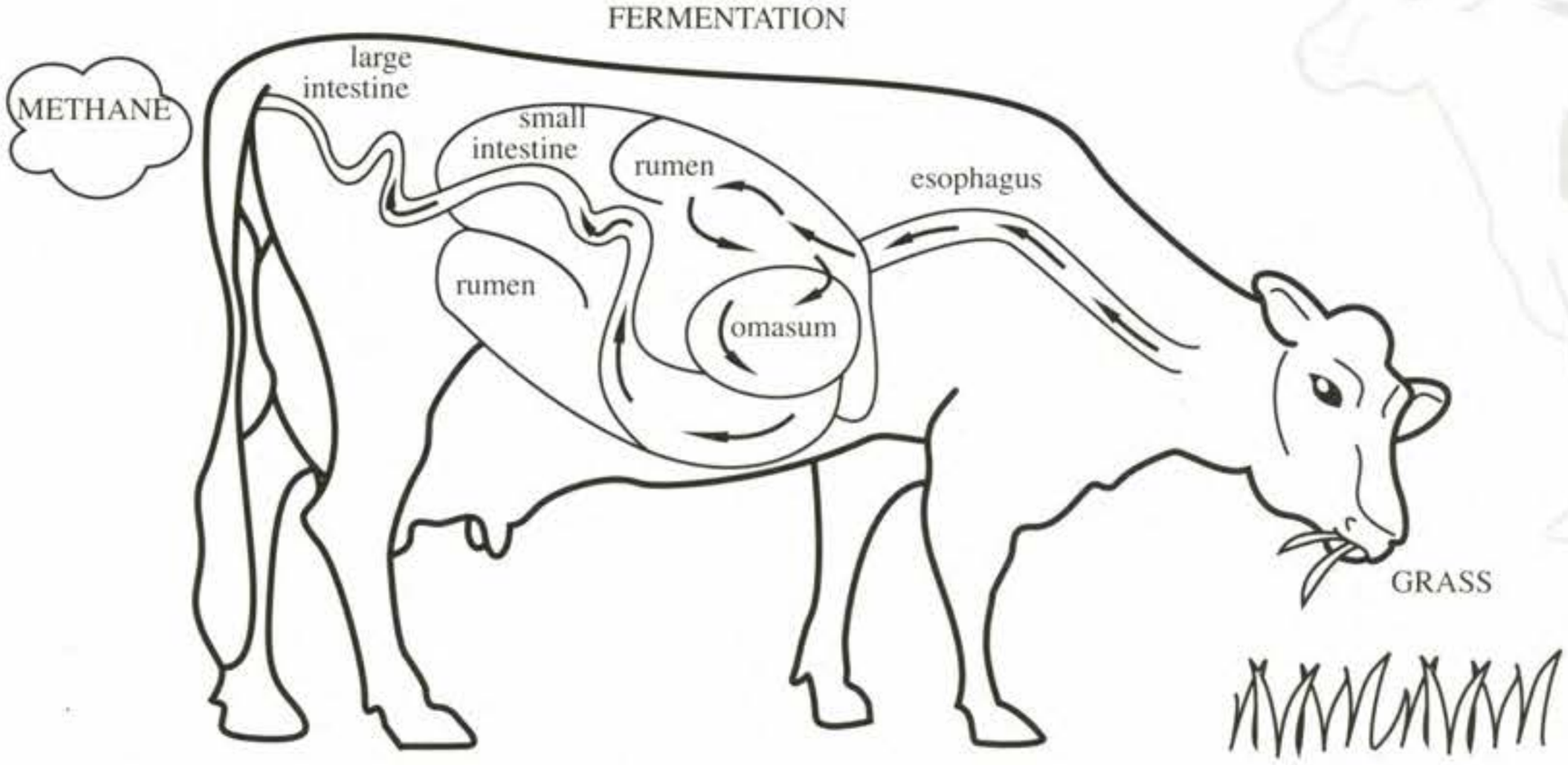
After the microbes have fermented all the grass in the rumen, they pass into the stomach and are digested. Cows get their proteins by digesting their own grass-fermenting bacteria, according to the United States Department of Agriculture.

This is a pretty good system. There's just one little problem: during fermentation, hydrogen is formed. If it's not removed, it can slow the whole process. In cows and sheep, the fermenting microbes get rid of hydrogen by making methane.

But not all herbivores produce methane. Kangaroos have a different fermentation chamber, called the foregut, filled with a different set of bacteria. Instead of using excess hydrogen to make methane, kangaroo microbes make acetic acid, which the kangaroos absorb and use for energy.

Dr. George Wilson, principal of Australian Wildlife Services, co-authored a 2008 study comparing environmental impacts of kangaroos and livestock. He suggests replacing cows and sheep with kangaroos as one of Australia's primary meat sources could mitigate global warming.

"If you increase kangaroo populations and reduce sheep and cattle, then you can eliminate some of the methane emissions from the livestock industry," said Wilson.




Australia's ranges are home to about 7.5 million cattle and 38.7 million sheep. Wilson proposed eliminating 7 million cattle and 36 million sheep over the next 12 years could reduce annual greenhouse gas emissions from Australian agriculture by about 20 percent.

Drawing down the numbers of sheep and cattle would create a lot of space suitable for kangaroos. Habitat for many more kangaroos is an important part of Wilson's model, because it would take a lot of kangaroos to replace the meat lost from reducing sheep and cattle herds.

Right now there are about 34 million kangaroos on the Australian rangelands. Wilson's study projected that 175 million kangaroos would be needed to produce the same amount of meat as the current livestock population. If all those kangaroos were lined up from head to tail, they would wrap around the earth 10 times.

Besides reducing methane emissions, there are other benefits of replacing range livestock with kangaroos. According to Dr. Ian Hume, wildlife nutrition specialist and professor emeritus at the University of Sydney, sheep and cattle are responsible for extensive environmental degradation. Livestock have hard hooves that erode soils, especially near water. Soft-footed kangaroos don't do this kind of damage.

Kangaroos living on golf courses is a specific example of their low environmental impact, Wilson said.

"You wouldn't find anyone who would let a bunch of sheep and cattle out there, but many golf courses have 50, 60, maybe 70 wild kangaroos."

So are Australians willing to replace their moo-burgers with roo-burgers?

According to Peter Ampt, program manager for Future of Australia's Threatened Ecosystems and author of a recent study on consumer reactions to kangaroo meat, most people like kangaroo meat flavor. While it can be described as gamey, much like deer or llama, it generally has a mild and pleasant taste.

Ampt said that eating kangaroo offers a variety of incentives. Kangaroo meat is lower in fat than both beef and lamb. The roo industry would also create a stable job market for many indigenous Australians in the isolated outback.

But some consumers have beef with the kangaroo harvest. Kangaroos are nocturnal, and the most efficient way to harvest the animals is to shoot them in the field at night using spotlights and rifles. Although the Australian government regulates the process, some people see it as cruel.

Others just don't like the thought of eating the meat.

"Rural people have traditionally shot roos for dog food," Ampt said, "So they will always associate the smell with that."

Wilson and Hume agreed that taking full advantage of the environmental benefits of kangaroos for lower-emission meat would require cultural and social changes.

"It's not going to be an overnight switch," Hume said. "There is a negative feeling about eating the national symbol, and consumers need to be educated."

Not everyone sees kangaroo as the eco-friendly entrée of the 21st Century.

"Some people have come up with the ridiculous notion that eating Australian native wildlife is somehow green, wholesome, and good for the planet," said Malcolm Fisher, community campaigner for The Wilderness Society, an environmental protection organization.

In a recent letter submitted to the Australian Federal Minister for the Environment, The Wilderness Society said there are many problems associated with the kangaroo industry. Kangaroos are marsupials, meaning females carry their young in a pouch during initial development. A large number of mothers carrying joeys (baby kangaroos) are harvested each year, killing two generations at once.

The Wilderness Society also maintains that the existing kangaroo industry can't sustain current growth. The Society said one industry leader wants kangaroo meat to represent 8 percent of all meat consumption in Australia by 2010. To achieve this goal, all export markets would need to be closed and kangaroo harvest quotas increased by 78 percent.

Not to be forgotten are the livestock ranchers, who make a living from the industry some scientists propose to diminish. How do they feel about replacing cows with kangaroos?

"Suggestions that kangaroos could replace cattle and sheep for meat production in Australia's rangelands is quite simply not a realistic option," said Jed Matz, policy director for the Cattle Council of Australia.

According to Matz, the Australian beef industry exports around two-thirds of its production to more than 100 countries. The Council isn't opposed to kangaroo meat production. But their global consumers demand beef – not kangaroo – and collectively purchase about $120 million worth of beef products each week.

If the global economy wants Australian beef, can anything be done to supply the demand without the associated methane emissions? Dr. Athol Klieve, senior researcher with the Queensland State Department of Primary Industries and Fisheries, wants to find out if he can make a methane-free cow. He hopes to transfer some of the kangaroo's digestive organisms into livestock.

But you can't just take kangaroo microbes, toss them into cows and sheep and expect the livestock to stop producing methane. Fermenting chambers are like big factories where each type of bacteria has a different job to do. The host

of bacteria inside kangaroos works differently than the bacteria inside cows. Before they can put kangaroo microbes into a cow's stomach, scientists must first find out how each strain of bacteria does its job.

Klieve and his colleagues have isolated a number of species of bacteria that make acetic acid in kangaroos. It is those microbes that he hopes to move to sheep and cattle. But it may be years before science engineers a climate-friendly cow.

"We are trying to gather knowledge and a relatively complete understanding of how a very complex and unexplored ecosystem works," Klieve said. "This all takes time and involves the use of molecular techniques that are very complex and in many cases still evolving themselves."

While concepts seem laudable, the reality of transforming the livestock industry in Australia is complicated. Many practical, ethical and economic questions must be considered. Are the emission-cutting proposals achievable? Will the kangaroo industry be humane? Can the market change and still meet global demands?

For a few scientists trying to get the Australian cattle industry to go green, the future is promising. Whether it's convincing the public to eat more kangaroo steaks or biologically engineering a methane-free cow, researchers from Down Under are going over the top to reduce methane emissions from livestock and get serious about global climate change.

**Cody Gillin** studies environmental science. This is his first published piece.

**Above:** Mike Apol of the Andgar Corporation stands on top of a digester that creates 425 kwh of energy each day.

**Below:** Action, a cow at Vander Haak Dairy in Lynden.

## A Local Solution to Cow Pollution: the Straight Poop on Manure

As Australia turns to kangaroos to eliminate the environmental problems associated with raising livestock, here in northwest Washington, farmers are taking a different approach.

Whatcom County is home to about 50,000 cows, said Paul Grey, executive director of Whatcom Farm Friends. That's about one cow for every three residents. But the local bovines aren't destined for the barbecue like their Aussie cousins. They're dairy cows, and they live to produce the stuff that muscular Mr. T. told kids to drink: milk.

While busy making milk, Whatcom cows also produce methane. But unlike Aussie cattle, whose global warming contribution is primarily from flatulence, dairy cows have a more pressing poop predicament.

On the range, cows do their business sporadically across the land. Manure is rapidly aerated and dehydrated, reducing the production of methane.

At a dairy, the livestock are kept in close proximity. All those cows together make a lot of manure, and after a while the puckies pile up. Farmers collect the manure and deposit it in reservoirs, where it slowly decomposes.

When all that manure is put together, it continues to ferment and produce methane. The process emits foul smelling gasses like ammonia and volatile organic compounds. It also releases nitrogen and phosphorus. If these nutrients leech into water sources, they can cause harmful algal blooms, loss of aquatic plants and fish mortality.

Enter the anaerobic digester at the Vander Haak dairy farm in Lynden. This house-sized machine takes biological wastes in one end, and sends electricity and useable substances out the other.

Mike Apol is regional manager of the Biogas/Renewable Energy program for Andgar, the company that makes the digester in Lynden. He said the machine simply finishes the process started inside the cows. Organic products such as manure and feed waste enter the digester. The material is heated to 100 degrees Fahrenheit. Over a period of about three weeks, it passes through several chambers, constantly being mixed for maximum fermentation.

Methane collects on top of the churning biowaste. It fuels the engine of a gas-combustion generator that sends electricity directly into the power grid. The dairy produces 425 kilowatt-hours of energy each day. That's enough to meet the energy demands of 16 single-family homes every month.

One of the byproducts of the whole process is a mostly inorganic liquid that can be sold as a fertilizer.

"They tested it on the grass in the field next to the digester," Apol said. "Grass on the fertilized side was much more thick and green than the part they left alone."

The second byproduct is an organic solid. The Vander Haak dairy utilizes it as bedding in cow stalls instead of buying sawdust.

When it comes to solving the problems with poop, dairies using anaerobic digesters such as the Vander Haak farm in Lynden are in a unique position to handle manure-related environmental concerns.

**For more information on the Vander Haak dairy and anaerobic digester, see "Manure-able Energy" in The Planet, Winter 2005.**

# Local v. Organic

Written by **Carly Crabb**
Photos by **Cassi Gallagher**

## How to be a label-savvy consumer

*You eat them everyday. The produce sections at countless grocery stores are packed with a spectrum of fruits and veggies, some with signs reading "organic" and "local" and some without. Those apples you had your eye on for that perfect pie may have traveled 1,500 miles to get here, while the other apples come from an orchard just up the road. But what's the difference? The question of whether to buy organic, conventional or local produce is a decision shoppers struggle with daily. Information on the differences between these labels can be hard to find, leaving concerned consumers at a crossroads.*

The amount of produce advertised as organic or local is on the rise, and it seems as if everything from prunes to potatoes has an organic counterpart.

Under today's standards, organic certification is a time-consuming and costly process for many small farmers, but only certified farmers can label their products "organic." This leads some to choose alternative certification programs, or label their produce as "local." Gone are the days when stickers on apples told consumers all they needed to know. Now, many shoppers are left standing in aisles, wondering what's best for themselves and the environment. But there are key differences between local, organic and conventional produce that may make your purchasing decisions easier.

According to the Environmental Protection Agency, most produce sold in the United States travels an average of 1,500 miles before reaching your table. Purchasing local produce reduces the distance food travels, cutting down on CO2 emissions and putting dollars back in the pockets of local farmers.

However, the term "local" remains loosely defined. Those involved in the "Locavore," or 100-mile diet movement, believe that local food comes from within a 100-mile radius from one's home. Whole Foods Market, a national natural and organic grocery store chain, considers products "local" only if they have traveled fewer than seven hours by truck, according to their Web site. This means that in Washington State, produce from Spokane can be considered local in Seattle.

The term organic, on the other hand, has been strictly defined by the United States Department of Agriculture (USDA) as produce that has been grown without using synthetic pesticides or fertilizers.

Although both local and organic movements are increasing, the USDA has only set standards for organic produce. In October 2002, these standards became the National Organic Program. All farmers making over $5,000 annually and who wish to advertise using the word organic must certify their farms with the program.

"I would prefer if I didn't have to certify," said Mike Long, owner of first-year Whatcom County farm Galactic Organics. Long said he chose to certify for marketing purposes.

"In order to sell in some places, you have to

**Left:** Certified organic vegetables from Cedarville Farm.

**Below:** Mike Finger, co-owner of Cedarville Farm, handles tomatoes at the Bellingham Farmer's Market.

be certified," Long said, "Such as Terra Organica downtown."

Jason Weston, co-owner of non-certified organic farm Joe's Garden in south Bellingham, believes larger farms can make a better profit because they have more land. The organic label is a way for small farms to get their foot in the door with markets and grocery stores.

The purpose of certification, however, is to make sure there are standards and that they are being enforced, said Dr. Gigi Berardi, professor and director of Huxley College's new Institute for Global and Community Resilience.

But the certification process can be expensive, especially for new farms. In Washington State, farmers must pay an application fee of $250, an inspection fee of $20 and an annual fee ranging from $200 to $2,000 based on the farm's profit, according to the Washington State Department of Agriculture.

As an alternative to paying the certification fees, many farmers have chosen to drop the word organic from their advertising schemes. Even though these farmers meet and sometimes exceed organic standards, without USDA certification they are not legally allowed to refer to their produce as organic.

Joe's Garden has been locally farming in Whatcom County for over 100 years. The garden uses no pesticides, organic or synthetic, on their crops.

Certified or not, Weston believes the key to healthy farming lies in the soil. He has the garden tested once a year to make sure the ground has the nutrients it needs to grow healthy and organic produce.

"It's about working with the environment," said father and previous owner Carl Weston.

**"I would prefer not to serve my children food sprayed with pesticides."**

"Thirty years ago, farmers were trying to protect their farms from bugs and disease. They didn't realize they were actually killing the good insects such as ladybugs and wasps."

For other small farms, third party certification programs such as the non-profit Certified Naturally Grown program (CNG) based out of New York give farmers an alternative to USDA organic farming. Hauck's Orchard in Ferndale is the only CNG farm in Whatcom County, according to the list of farms on the CNG Web site.

Though unrelated to the USDA, the CNG program uses the same standards as the National Organic Program. According to CNG, the effort runs primarily on donations from farmers and supporters.

By using the same standards, consumers can be sure that their produce meets the same regulations that the USDA has implemented, as well as supporting farmers who may not otherwise be able to afford certification.

Farmers are not the only ones feeling the higher price of organic farming. Consumers also pay more for eco-friendly foods. According to a 2006 article from the Journal of Food Science, organic products typically cost 10 to 40 percent more than their conventional counterparts.

An article published by the Mayo Clinic, a United States non-profit medical practice and research group, found that the difference in price between organic and conventional produce is due to more expensive farming practices and lower crop yields. For example, because organic farmers don't use any herbicides, growers may weed their crops by hand.

"It's a hard decision. I want to support better environmental practices, but as a college student, I can't really afford paying for organic foods," said Ryan Gadwa, a junior at Western Washington University.

Gadwa is not alone. For the other shoppers leaving the store frustrated over the choice between higher-priced organic and less-regulated conventional produce, there are alternatives.

The Environmental Working Group, a non-profit organization located in Washington D.C., published a list of produce containing the highest levels of pesticides, helping shoppers decide which foods to buy organic and which to buy conventional.

According to the list, fruits and vegetables with an outer peel or rind that is not consumed, such as avocado and pineapple, generally have lower amounts of pesticides in the part of the fruit that is eaten. It is better to buy organic for fruits that are consumed entirely, such as peaches and apples, because they have the highest levels.

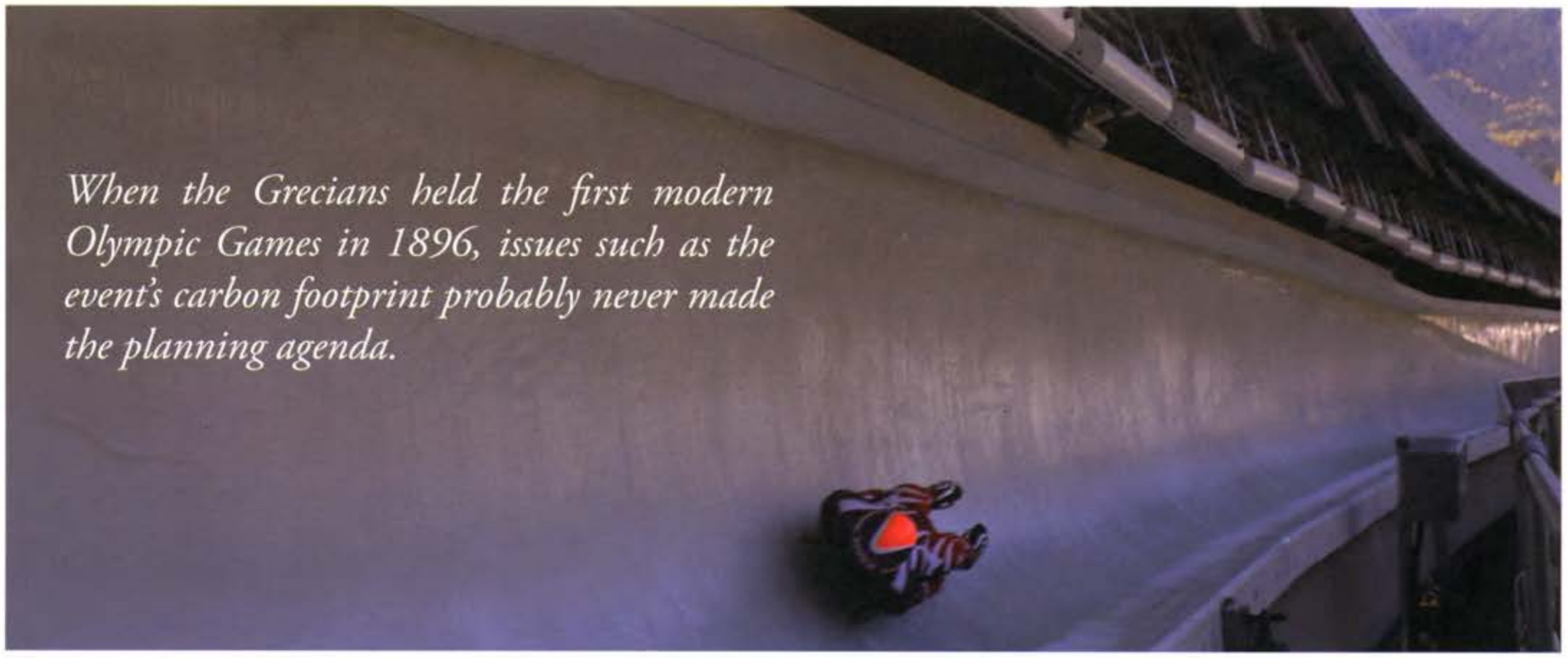
Purchasing organic produce for children is always a good idea, according to Western Biology Instructor Georgianne Connell. Exposure to pesticides during childhood can result in permanent adverse effects, according to the EPA.

"I would prefer not to serve my children food sprayed with pesticides," Connell said.

The alternatives to conventional produce are out there. Locally grown foods reduce transportation costs both economically and environmentally, as well as supporting local farmers. And organic foods, although they may cost more, use farming practices that support a healthy earth. By looking beyond labels, you can find produce that benefits your body, your wallet and the environment.

**Carly Crabb** studies creative writing. This is her first published piece.

# Surpassing



*When the Grecians held the first modern Olympic Games in 1896, issues such as the event's carbon footprint probably never made the planning agenda.*

**Left** (also p.24): Olympic athletes practice luge at Whistler Sliding Center

**Right:** Tour Coordinator Lana McKenzie explains the heat recovery system at Whistler Sliding Center.

Times have changed, however, and in an effort to host the most environmentally-sustainable Olympic Games to date, the Vancouver Olympic Committee is designing venues that stretch the limits of sustainable technology.

Through a variety of land assessments and the use of energy-efficient systems, organizers hope to conserve Vancouver's natural environment and offset the negative effects of such an enormous building project.

One venue in particular, the Whistler Sliding Center, challenged the committee to find innovative solutions to reduce the center's energy consumption and land destruction. The sliding center will be the site for the luge, bobsled and skeleton competitions in the 2010 Winter Games.

"I've been to four other sliding venues around the world, and the Whistler Sliding Center is leaps and bounds above those tracks in terms of its environmental impact," said Laurenz Kosichek, the sliding center's project director from Stantec Architecture.

Construction on the outdoor venue began in June 2005 and finished in October 2007, formally opening to the public this fall. The 4,757-foot track surface is covered in 1 to 2 inches of solid ice, allowing competitors to reach speeds of more than 80 mph. The Whistler Sliding Center is the fastest sliding venue in the world, Kosichek said.

Because the entire track must be refrigerated at all times, energy consumption was a major concern in designing the sliding center, said Maria Hudspith, senior consultant for Hollyhock Leadership Institute. Hollyhock worked with Vancouver's Olympic committee to create a sustainability agenda for the games based on feedback from more than 20 environmental organizations.

According to the committee's 2006-07 Sustainability Report, Olympic organizers collaborated with Stantec and Cimco Refrigeration to devise methods of making the sliding center as energy efficient as possible.

With 9,000 feet of pipe running below its icy track, the sliding center uses a massive ammonia refrigeration system that is both efficient and sustainable, said Gary Kuzyk, manager of Cimco Refrigeration.

"An ammonia system is a perfect fit for the sliding center because it offers a very good net refrigeration effect compared to Freon refrigeration," Kuzyk said.

According to the Environmental Protection

# the Torch

VANCOUVER 2010

Written by **Kim Gladow** | Photos by **Sita Thompson**

**"It's important to recognize that we are not the first organizing committee for a winter games to put together a program to try and reduce the carbon impact of the games. [Our] program will build on the experiences of Salt Lake City and Torino and add a few new elements."**

Agency, Freon was the standard chemical agent used in most cooling appliances up until the mid-1990s. Within the last decade, however, studies revealed that its high chlorofluorocarbon content caused ozone layer depletion and the coolant was quickly phased out.

While the production of ammonia releases CO2, an article in the "Journal of the American Chemical Society" states that ammonia gas itself has no impact on global warming.

Hamid Azarnosh, a Cimco engineer, explained that the ammonia is pumped through the long pipe system in liquid form. Through compression, it evaporates and absorbs significant amounts of heat, leaving the surrounding pipes cool. The overall heat transferring process is highly efficient, Azarnosh said.

Even so, the energy required to keep the ice frozen is approximately 17 million British thermal units per hour a measurement equal to maintaining 14 frozen ice rinks, or 3,500 average household refrigerators.

In an attempt to reduce the venue's total energy use, the sliding center employs a revolutionary heat-recycling system called EcoChill. The system is designed to recover the heat energy used to cool industrial-sized ice venues, Kuzyk said.

The EcoChill technology at the sliding center captures 10 percent of the heat waste from the track and transfers it through pipes to the base of the run, where it heats the refrigeration plant's mechanical room and track lodge.

"In some cases it is possible to recover up to 100 percent of the energy used and reuse that," Kuzyk said. "But it has to make sense economically. Every facility has different opportunities for heat recovery."

The Dow Centennial Center, a multi-purpose recreational facility in Fort Saskatchewan, Alberta, was one of Cimco's first refrigeration projects to use EcoChill technology. The center includes two ice rinks, an indoor soccer field and a fitness center with running track, all enclosed within a single 110,000-square-foot facility.

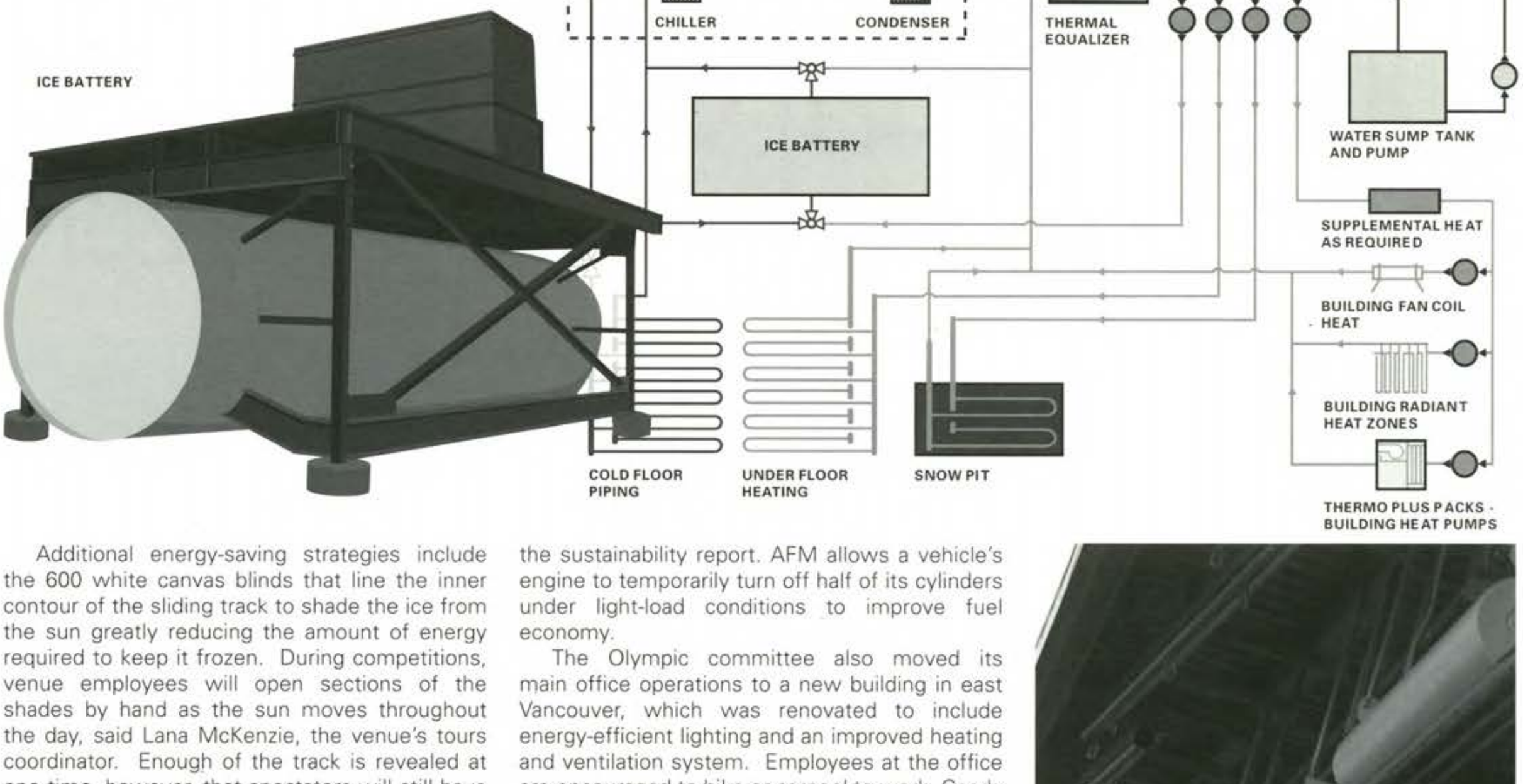
Kuzyk said the venues' close proximity to one another create a perfect opportunity for 100 percent heat recovery. The heat waste from the ice rinks can be captured and transferred to the soccer field and fitness center without setting up an expensive infrastructure of piping between each arena.

According to Cimco, the amount of energy saved at Dow Centennial Center each year is equivalent, emission-wise, to driving 976 cars from Seattle to New York City.

The Whistler Sliding Center's isolated location, however, makes it too costly to run piping down the mountain to other Olympic venues that could potentially reuse 100 percent of the track's expended heat. Therefore, the recovery system at the sliding center only uses 10 percent of the track's heat waste, Kuzyk said.

As heat waste is released from the sliding track, it travels through an underground piping system to the refrigeration plant. Upon reaching the plant, the heat is channeled through a set of compressors into the ice in the ice battery, where it is stored temporarily before it is used to heat the mechanical room and track lodge.

Infographics by **Ryan Scott**




Additional energy-saving strategies include the 600 white canvas blinds that line the inner contour of the sliding track to shade the ice from the sun greatly reducing the amount of energy required to keep it frozen. During competitions, venue employees will open sections of the shades by hand as the sun moves throughout the day, said Lana McKenzie, the venue's tours coordinator. Enough of the track is revealed at one time, however, that spectators will still have a clear view of the athletes during their runs.

McKenzie also explained that the sliding center is painted white to reflect sunlight and keep the track cool.

Before construction on the sliding center even began, the Olympic committee completed a Federal Environment Assessment Review to select the best site for the venue, McKenzie said. Organizers chose a former alpine ski run on Blackcomb Mountain in order to avoid excessive vegetation clearing.

"We tried to be smart about keeping as many pockets of trees as possible," McKenzie said.

According to the committee's sustainability report, most of Vancouver's other event venues, such as the Whistler Olympic Park and Whistler Creekside, use similar technology and site selection methods to reduce their environmental impact.

"It's important to recognize that we are not the first organizing committee for a winter games to put together a program to try and reduce the carbon impact of the games," said Linda Coady, the Olympic committee's vice president of sustainability. "[Our] program will build on the experiences of Salt Lake City and Torino and add a few new elements."

While Salt Lake City and Torino's sustainability programs only spanned the 17 days of their Olympic Games, Vancouver's program began as early as 2003 during the event's initial planning stages, Coady said.

Of the 96 vehicles that organizers are using for employee transportation, 50 percent are equipped with either hybrid or Active Fuel Management (AFM) technology, according to the sustainability report. AFM allows a vehicle's engine to temporarily turn off half of its cylinders under light-load conditions to improve fuel economy.

The Olympic committee also moved its main office operations to a new building in east Vancouver, which was renovated to include energy-efficient lighting and an improved heating and ventilation system. Employees at the office are encouraged to bike or carpool to work, Coady said.

When the actual games begin in February 2010, the committee will rely primarily on Vancouver's mass transit system to transport spectators to and from venues. Most event tickets include transit passes and initiatives have already been established to encourage non-motorized access to specific events.

The cost of hosting such a sustainable Olympic Games is enormous, but the effort attracts sponsors interested in funding specific environmental initiatives, Hudspith said.

According to the sustainability report, many groups, including the United Nations Environment Programme, wanted to help sponsor the event because of the international visibility it gives to ever-growing environmental concerns.

"I think the emphasis on sustainability is a response to changing times," Hudspith said. "There's an expectation that things are going to be done differently."

London has already announced that one of its goals for the 2012 Summer Olympics is to make its Olympic Park a blueprint for sustainable living. Specific plans include constructing new waste management infrastructure and a commitment to minimizing carbon emissions.

Vancouver is setting an international precedent as far as environmental sustainability goes, Hudspith said.

"These games could have such a potentially big impact," she said. "And I think people recognize that opportunity."

**Kim Gladow** studies graphic design. She has been published in The Western Front.

# The Clean Green Advertising Scheme

Written by **Michelle McRory** | Photos by **Sita Thompson**


Western senior Willie Northcott and Bellingham resident Sean Depner sort through products advertised as environmentally friendly.

*Celeste Patten stands in the personal care aisle at Fred Meyer. She picks up a bottle of lotion with the words "all natural" highlighted on the label, flicks open the lid and smells the contents. Unimpressed, she places the lotion back on the shelf. Next to her is a shopping basket carrying bottles of shampoo and conditioner, both labeled "pro-organic."*

A sea of so-called green products is flooding supermarket shelves, enticing conscious consumers with environmental buzzwords. The "go green" phenomenon reflects a market searching for safer alternatives to products thought to adversely affect consumer health and the environment, according to the National Center for Environmental Economics.

Even companies like Clorox have jumped on the green bandwagon. But with no regulations on advertising, consumers are losing their bearings in the marketplace. The new trend has some companies painting a greener picture than they deserve.

The increased use of green advertisements triggered the Federal Trade Commission (FTC) to review the Environmental Claims Marketing Guidelines in 2008, a year earlier than anticipated, said Laura Koss, staff attorney for the FTC.

The FTC guidelines serve as an educational tool for companies on how to properly label their environmentally-friendly products. Although the guide aims to protect consumers from being misled, it is merely a set of suggestions, and therefore is not enforceable by law.

If a company's claim is blatantly false, the state may use the guidelines as support for legal action against the advertisement. Enforcement at the state level can prevent dishonest practices, but with each state entitled to its own set of regulations and no national standard, companies are left with ambiguous guidelines. Consumers like Patten are left standing in the aisle wondering if the words "pro-organic" hold any value.

When knowing what to look for, reading labels empowers consumers to make the right decisions in the supermarket, said Aileen Zerrudo, Clorox's senior group manager.

**"Maybe the product is better for me, but not the earth."**

According to the FTC, consumers should be wary of slogans like "earth smart," "eco-safe," "all natural" and other vague terms, unless companies can prove the claim.

Environmentally-conscious purchases are not limited to products themselves. Packaging is offered in all shades of green from "reusable," "degradable" and "compostable" to "post- or pre-consumer waste." But no matter what label is used, proof must accompany the statement, Koss said.

Instead of wax-lined cups made of polyolefin, which is derived from non-renewable petroleum, Tully's Coffee Corporation uses ecotainers. The cups are lined with corn-derived ingredients and are 100 percent compostable – but this is only useful if the cups are actually composted.

Materials degrade slowly in landfills, which are engineered to keep sunlight, air and moisture out of the facility. Hot dogs dating back ten years have been found in landfills, according to a press release by the Biodegradable Products Institute.

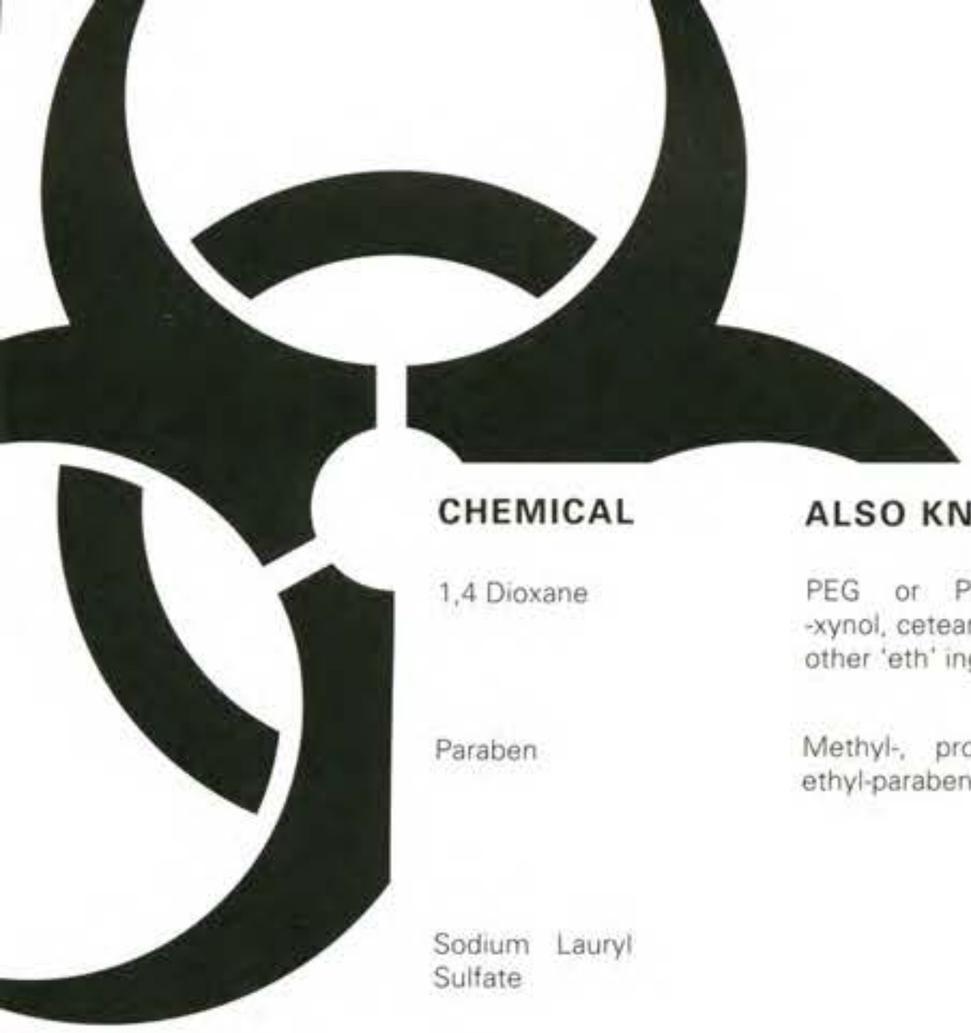
Understanding the setbacks, Tully's hired Cedar Grove Composting to compost the ecotainers disposed of in all Tully's Washington retail stores.

Green claims are not always transparent. A bottle reading "25 percent less waste" is unclear. Is it "less waste" compared to its previous product, or its competitors'?

Discredit any claim if it offers no further detail accompanying the statement on the label or the company's Web site, according to the FTC. A consumer must see through the advertisement or become yet another victim of greenwashing – the act of misleading consumers with false environmental claims.

Taking matters into her own hands, Patten searches the shampoo bottle for an indication of an environmental packaging merit, but finds nothing.

"Maybe the product is better for me, but not the earth," she said.



| CHEMICAL | ALSO KNOWN AS | FOUND IN | HEALTH RISKS |
|---|---|---|---|
| 1,4 Dioxane | PEG or Polyethylene glycol -xynol, ceteareth, oleth and most other 'eth' ingredients | A range of products from cleaners to personal care products | Known carcinogen in animals and possibly humans |
| Paraben | Methyl-, propyl-, butyl-, and ethyl-paraben | Antimicrobial preservative in cosmetics and food | Possible link to breast cancer, endocrine disrupting activity, developmental and reproductive toxicity found in animal studies |
| Sodium Lauryl Sulfate | | Toothpaste, mouthwash, hair color, body wash and other personal care products | Causes headaches, irritation of eyes, nose and throat, lethargy, loss of appetite and inability to concentrate. |
| Fragrance - May have up to 3,000 separate ingredients. | | Almost all products from cleaners to personal care products | Some ingredients can cause liver, kidney and brain damage |
| Mercury | Thimerosal | Some eye drops, deodorant, ointments and mascaras. | Possible human carcinogen. Causes reproductive or developmental toxicity in animals. |

Five Chemicals to Avoid: Compiled by writer from toxnet.nlm.nih.gov, The United States Department of Health and Human Services household product database, the United States Environmental Protection Agency (EPA) and the National Institute for Occupational Safety and Health (NIOSH)

As Patten inspects the label further, she finds a mixture of organic and natural ingredients – two phrases that are not interchangeable.

In order for a product to have a label including the word "organic," the organic ingredients must be certified by the United States Department of Agriculture (USDA). Products labeled "organic" or "100 percent organic" bear the USDA stamp, which cannot appear on any products with fewer than 95 percent certified organic ingredients.

Other products containing at least 70 percent organic ingredients, however, can be labeled "made with organic ingredients." Although they don't have the USDA logo, the organic ingredients in these products are still certified by the USDA. Products with fewer than 70 percent organic ingredients can only use the word "organic" on their ingredient lists, and nowhere else on their labels.

Unlike the term organic, the word "natural" remains unregulated. This leaves the interpretation of "natural" ingredients up to manufacturers. Since no government standards define specific eco-terms except organic, a chemical cocktail shows up in many "natural" products.

A study by The Organic Consumers Association (OCA) tested over 100 natural and organic products for a chemical called dioxane, a toxin known to cause cancer in animals and possibly humans. None of the certified organic products contained detectable levels of the chemical, but traces of the toxin were found in 47 natural products. The study found 1.9 parts per million of the same agent in Seventh Generation Dish Liquid, a cleaner claiming to be natural.

Although the United States Food and Drug Administration (FDA) deemed the levels safe, Seventh Generation's President Jeffrey Hollander began to eliminate the chemical from their product line, according to Seventh Generation's 2007 Corporate Consciousness Report.

To avoid exposure to toxic chemicals, consumers should choose products with the least amount of ingredients on the label, according to the OCA. The FDA requires manufacturers to list all ingredients in descending order of concentration. A product with lavender water listed first on the label is better than one with fragrance, one scent that may be composed of up to 3,000 separate, mostly synthetic ingredients, according to the National Institution of Occupational Safety and Health.

Understanding consumer skepticism, Clorox sought out third-party recognition for their product Green Works, a line of natural cleaners.

"We wanted to show this is the real deal," Zerrudo said.

In the absence of national standards, looking for third-party endorsements helps consumers sort through the green hype. Both the Environmental Protection Agency's Design for the Environment (DfE) and the Sierra Club's logos are stamped on the Green Work's label.

Yet each logo represents different information. The Sierra Club's logo represents Clorox's financial support for the organization, Zerrudo said. The DfE seal, although not from a true certification program, signifies the product uses the least harmful ingredients possible.

But no matter how enticing a green advertisement is to consumers, all products have an environmental footprint. Every stage of a product's life cycle – the extraction of raw materials, manufacturing and distributing, use and disposal – has an impact on the environment.

BioKleen, a Vancouver, Washington-based company, gained recognition from the DfE on their line of cleaners. As a mother and wife, Amanda Tiedt, BioKleen's marketing director, said looking beyond the price of a product to its contents keeps her focused in the supermarket.

Tiedt said concentrated products like BioKleen represent a well-rounded green choice. The products last longer, creating less packaging and waste.

Consumers drowning in the green wave are searching for a rescue line from companies and products with honest intentions. Reading labels, questioning advertisements and looking for third-party certifications can guide the weary consumer.

Fragrances hang thick in the narrow aisle corridor where Patten stands. What was supposed to be a quick stop for shampoo turns into a prolonged engagement.

Finally, she deems the certified organic oils superior to the synthetic, petroleum-based fragrances. Although Patten may not realize it, her choice results in better health for her and the environment.

**Michelle McRory** studies environmental education. She has been published in the Western Front and The Imokilly People.

# ON ASSIGNMENT

Photo by **Chad Smith**

Backpacking along the Skyline Ridge Trail in the southern region of the Olympic National Park, our expectations were high, anticipating glimpses of beautiful landmarks and spectacular scenery. However, we never expected to witness so many of the striking peculiarities of the forest that surrounded us. Within the first few miles, we stumbled across a hollowed tree, inviting us to take interest and consider its unusual form. The tree perfectly captured the essence of the park and all its wonderful little secrets that are only shared with the few who take the time to visit and open their eyes. – **Amy Diehl**

Our planet is a lonely speck in the great enveloping cosmic dark. In our obscurity – in all this vastness – there is no hint that help will come from elsewhere to save us from ourselves. It is up to us. It's been said that astronomy is a humbling, and I might add, a character-building experience. To my mind, there is perhaps no better demonstration of the folly of human conceits than this distant image of our tiny world. To me, it underscores our responsibility to deal more kindly and compassionately with one another and to preserve and cherish this pale blue dot, the only home we've ever known.

- Carl Sagan

Western Washington University